

# Memorandum

**To:** ISO Board of Governors  
**From:** Keith Casey, Director, Market Monitoring  
**CC:** ISO Officers  
**Date:** May 21, 2007  
**Re:** Market Monitoring Report

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***This is a status report only. No Board action is required.***

This month's Market Monitoring Report summarizes results of recent monitoring activities related to the frequency with which participants decline to accept dispatch instructions issued by the CAISO through the process of pre-dispatching supplemental energy bid on the inter-ties. In response to a recent increase in the decline of such pre-dispatches, the Department of Market Monitoring (DMM) contacted numerous Scheduling Coordinators (SCs) in order to obtain information on the potential reasons for relatively high rates of declined pre-dispatch instructions. DMM believes that relatively high rates of declined pre-dispatches may not be fully consistent with CAISO market rules, which require that bids for energy represent "resources that are reasonably expected to be available and capable of performing at the levels specified in the bid."<sup>1</sup> DMM is providing results of this review to FERC's Office of Enforcement (OE) in an effort to seek clarification on how this market rule may apply to bidding practices that result in high rates of declined pre-dispatches. Over the longer term, DMM believes that additional market rules may need to be considered to deter bidding practices that result in high rates of declined pre-dispatch instructions.

## Background

CAISO market rules allow market participants to submit or revise Supplemental Energy bids up to 62 minutes prior to the beginning of each operating hour, after which time these bids cannot be withdrawn.<sup>2</sup> The CAISO "pre-dispatches" energy for imports and exports of real time energy by issuing dispatch instructions for incremental and decremental energy on the inter-ties at about 45 minutes prior to the beginning of each operating hour via its Automated Dispatch System (ADS). Participants then have five minutes to accept or decline these pre-dispatch instructions. If a participant does not respond to an ADS pre-dispatch instruction within 5 minutes (i.e. by 40 prior to the operating hour), the ADS automatically assumes the bid will not be accepted and the bid is "timed out".<sup>3</sup> The timing restrictions of this pre-dispatch process are designed to allow the CAISO and other control area operators sufficient time to check and manage final scheduled flows between

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<sup>1</sup> CAISO Tariff 37.3.

<sup>2</sup> CAISO Tariff 34.2.1.1

<sup>3</sup> Throughout this memo, inter-tie bids that are "timed out" and are not subsequently accepted manually are considered to be declined pre-dispatch instructions.

neighboring control areas, while still allowing market participants sufficient time to finalize the necessary arrangements for energy and transmission in adjacent control areas..

The amount of Supplemental Energy that will be pre-dispatched at the inter-ties for each operating hour is determined through the same software application that runs the CAISO real-time imbalance energy market – the Real Time Market Application (RTMA). By the time information on the amount of pre-dispatched bids that are explicitly declined or “timed out” can be fed back into the pre-dispatch process (at about 30 minutes prior to the operating hour), there is not sufficient time for the CAISO to re-optimize or issue additional pre-dispatch instructions to replace declined pre-dispatches. Thus, if significant quantities of pre-dispatched Supplemental Energy bids at the inter-ties are declined by market participants, this can cause market inefficiencies or operational problems in a number of ways:

- Decline of pre-dispatched bids can increase the volume and volatility the CAISO’s real time imbalance energy needs that must then be replaced from the pool of 5-minute dispatchable resources during the operating hour. Depending on the amount of the net pre-dispatched energy declined and system conditions, this can result in RTMA dispatching more expensive sources of incremental energy (or selling decremental energy at lower prices) than if the declined pre-dispatched inter-tie bids were never submitted.
- Decline of pre-dispatched energy bids can cause a loss in net revenue ultimately borne by other CAISO participants. This results whenever the CAISO must dispatch higher cost energy (or sell decremental energy at a lower cost) from within the CAISO system to compensate for a declined pre-dispatch.
- Decline of pre-dispatched Supplemental Energy bids can cause incremental or decremental inter-tie resource capacity that would have been available to the CAISO to go unutilized.
- When pre-dispatched bids for energy in the counter flow direction on an inter-tie are declined, this can create or exacerbate real time congestion on inter-ties, which may require curtailment of other participant’s energy schedules to mitigate this congestion.

Pre-dispatch instructions may be declined for a number of physical reasons, including generating unit outages and transmission limitations. However, information provided by suppliers indicated that these various “physical” reasons account for a relatively very small portion of the total volume of declined dispatch instructions. DMM also notes that absent any restrictions or sanctions for the decline of pre-dispatch instructions, a market participant could treat pre-dispatched Supplemental Energy as essentially a cost-free option to sell or purchase energy. In this case, a market participant would submit one or more Supplemental Energy bids at the inter-ties and only deliver on dispatched bids if the bid’s price is profitable given the market participant’s options for buying or selling energy in bilateral markets at the time the CAISO dispatches the bid.<sup>4</sup> This scenario – combined with other “physical” reasons for declined pre-dispatch instruction --- creates the potential for significant market inefficiencies and operational problems due to the decline of significant quantities of pre-dispatched inter-tie bids.

### Applicable Market Rules

Several CAISO Tariff provisions address market participants’ performance in responding to dispatched Supplemental Energy bids, including pre-dispatched Supplemental Energy at the inter-ties. Most notably, CAISO Tariff 37.3 (Submit Feasible Energy and Ancillary Service Bids and Schedules) states that:

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<sup>4</sup> For example, a participant may submit an incremental bid at \$100/MWh, and then accept the pre-dispatch only if the participant was able to purchase energy in the bilateral market at a price less than \$100/MWh after receiving the pre-dispatch. Likewise, a participant may submit a decremental bid at \$50/MWh, and then accept the pre-dispatch only if the participant was able to sell decremental energy in the bilateral market at a price greater than \$50/MWh after receiving the pre-dispatch. With this strategy, the market participant may be likely submit multiple bids, each at different prices, for each operating hour to increase the probability of the CAISO accepting a bid at a favorable price.

Market Participants must bid and schedule Energy and Ancillary Services **from resources that are reasonably expected to be available** [emphasis added] and capable of performing at the levels specified in the bid and/or schedule, and to remain available and capable of so performing based on all information that is known to the Market Participant or should have been known to the Market Participant at the time of bidding or scheduling.

DMM has previously interpreted this rule to mean that while a Supplemental Energy bid standing after the deadline for submitting the bid is a binding physical obligation, market participants do not need to have a source in place for every Supplemental Energy bid they submit. However, DMM believes that CAISO Tariff 37.3 requires participants submit bids for quantities that they reasonably expect to deliver given market conditions, resource constraints, transmission limits, etc.

The importance of compliance with pre-dispatched Supplemental Energy dispatch instructions was reflected in the fact that declined pre-dispatches were included within the scope of an uninstructed deviation penalty (UDP) that was approved by FERC as an integral feature of the MRTU Phase 1b market design. FERC subsequently waived the UDP – at the CAISO’s request – because of concerns related to the ability of 5-minute dispatchable resources to closely follow dispatch instructions. However, the uninstructed deviation penalty would have also applied to pre-dispatched Supplemental Energy at the inter-ties.<sup>5</sup> Although the UDP is not currently assessed for declined pre-dispatch instructions, the CAISO’s Operational Compliance unit provides all participants with advisory reports which include data on declined pre-dispatch instructions that would be subject to UDP.

### Rates of Declined Pre-Dispatched Supplemental Energy

Monitoring of declined pre-dispatch instructions indicates an increase in the overall volume and rates of declined pre-dispatch instructions over the last few months, with about seven SCs accounting for the bulk of this increase. Figure 1 summarizes the amount of Supplemental Energy pre-dispatched at the inter-ties declined over the last two years. The bars in Figure 1 show the average hourly amount of declined incremental and decremental pre-dispatches during each month for two groups: (1) the seven SCs with the highest rates of declined pre-dispatch instructions, and (2) all other market participants. The lines in Figure 1 show the overall percentage of Supplemental Energy dispatched at the inter-ties declined each month by all participants.

In mid-April 2007, DMM staff contacted SCs with the highest rates of declined pre-dispatch instructions in order to obtain information on the potential reasons for the relatively high rates of declined pre-dispatch instructions. During these discussions, DMM also advised participants that extremely high rates of declined pre-dispatches may not be fully consistent with a CAISO market rule that requires market participants to bid energy “from resources that are reasonably expected to be available and capable of performing at the levels specified in the bid”, and that DMM may seek clarification from FERC’s Office of Enforcement (OE) on how this market rule may apply to bidding practices that result in high rates of declined pre-dispatches.<sup>6</sup> As shown in Figure 1, declines of pre-dispatch instructions dropped significantly in late April following these discussions.<sup>7</sup>

Many market participants with high rates of declined inter-tie Supplemental Energy dispatches apparently bid Supplemental Energy bids at the inter-ties primarily as marketers or traders of energy, rather than bidding based on resources that they control. Most of these participants contacted by DMM provided a similar reason for their high rates of

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<sup>5</sup> Declined incremental instructions would have been penalized at 50 percent of the Zonal Settlement Interval Ex Post Price and declined decremental instructions would have been penalized at 100 percent of the Zonal Settlement Interval Ex Post Price.

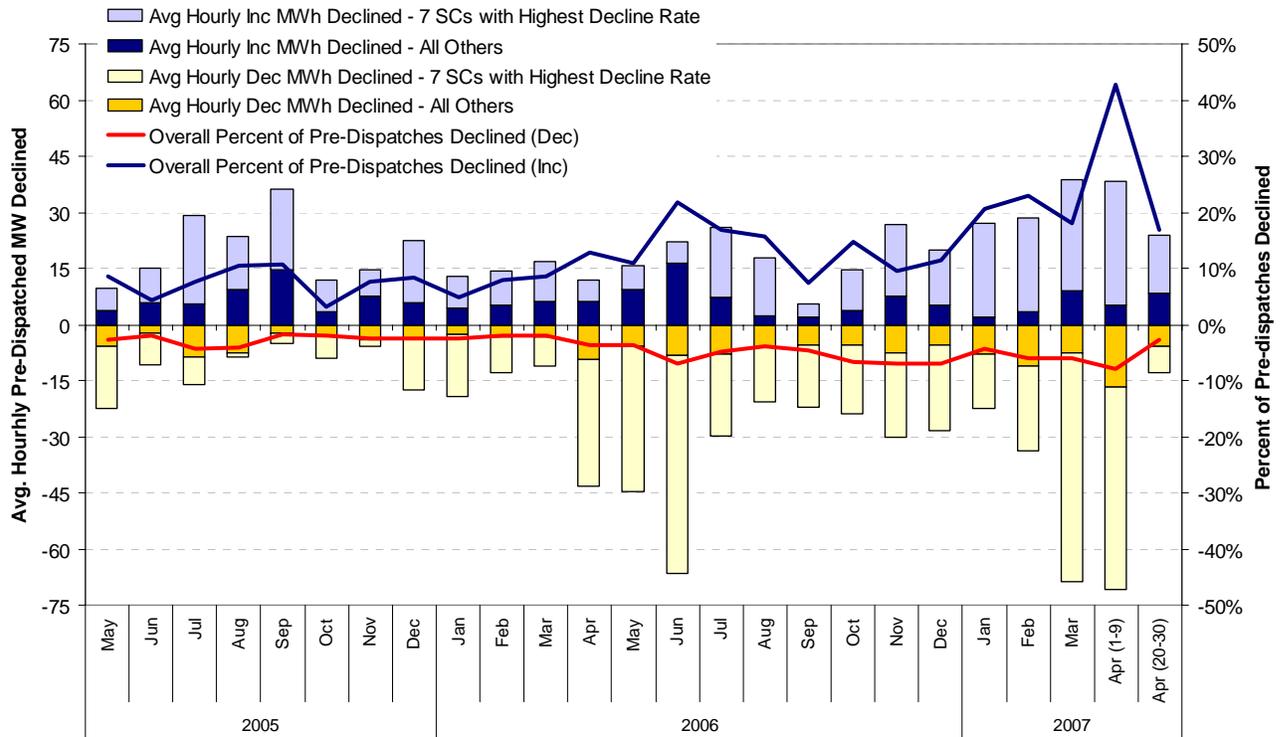
<sup>6</sup> CAISO Tariff Section 37.3.

<sup>7</sup> The calls to participants were nearly all made between April 10 and April 19. For this reason, that nine-day period is excluded from Figure 1.

declines – contending they are due to differences in the timing between the CAISO Supplemental Energy dispatches at the inter-ties and the bilateral “real-time” market for the western interconnection. Based on discussion with these participants, many or most declined inter-tie Supplemental Energy dispatches occur as a result of the following scenario:

- By the deadline for submission of Supplement energy bids in the CAISO real time (i.e. 62 minutes prior to the operating hour), these participants typically do not have a firm businesses arrangement to deliver incremental energy or receive decremental energy for each specific bid submitted. Rather, these participants indicated that they submit bids that they expect to be able to deliver (or accept) based on their evaluation of bilateral market conditions conducted shortly before bids are due. Participants' assessments of market conditions may apparently range from contacting specific counterparties to determine the availability of resources or willingness to purchases decremental energy, to just evaluating overall market conditions based on prevailing prices.
- Meanwhile, many transactions in the bilateral real-time market are being finalized at this same approximate time, and often completed by 60 minutes prior to the operating hour --- or just beyond the deadline for submission of Supplement energy bids in the CAISO real time market.
- Once a participant receives pre-dispatch instructions from the CAISO at 45 minutes prior to the operating hour, the potential source (or sink) of energy may not still be available to the participant, due to commitments made in the bilateral market. Consequently, the participant may not be able to obtain a supply or sink necessary to perform on the CAISO pre-dispatch instruction and must decline it.
- In some cases, participants also indicated that, in addition to the availability of resources to take or receive energy, lack of available transmission once the CAISO dispatches Supplemental Energy at the inter-ties sometimes contributes to declines.
- Finally, some participants also noted that they may be unable to locate a source or sink necessary to fulfill a pre-dispatch instruction due to the limited amount of time provided to accept a pre-dispatch instruction once it is received (5 minutes).

**Figure 1 – Declined Inter-tie Supplemental Energy Dispatches  
May 2005 – April 2007**



## Impact of Declined Pre-Dispatched Supplemental Energy

While declined dispatch instructions may have a significant detrimental impact on grid operations and market performance, the actual impact of declined pre-dispatches may vary widely depending on system conditions. For example, in some cases the impact of declined decremental instructions may be offset by declined incremental dispatches during the same hour, and *vice versa*. Similarly, the impact of declined dispatches may often depend on the volume of the declined pre-dispatch instructions for any given hour relative to demand and supply in the CAISO's 5-minute real time market.

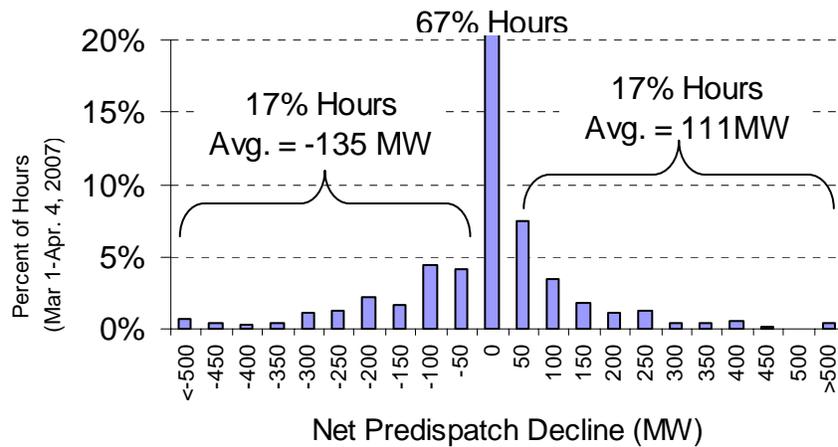
Figure 2 shows the frequency distribution of the net hourly amount of declined pre-dispatched Supplemental Energy at the inter-ties in March and early April 2007, when the volume and rate of declined pre-dispatch instructions reached the unusually high levels depicted in Figure 1.<sup>8</sup> As shown in Figure 2, there was essentially no net pre-dispatch decline for 67 percent of the operating hours during this period. However, for 17 percent of the operating hours there was a net decline of 111 MW of incremental energy, and for another 17 percent of the operating hours there was a net decline of 135 MW of decremental energy. In addition, Figure 2 shows that the net amount declined during any hour rarely exceeded 200 MW during this period.

Additionally, Figure 2 shows that there has been a relatively weak correlation between the volume of net declined pre-dispatch instructions and market clearing prices in the CAISO's Real Time Market during this period. Although Figure 2 suggests that large volumes of declined pre-dispatch instructions for incremental energy may have contributed to price spikes during some intervals, these data show that most price spikes have occurred when the net volume of declined pre-dispatch instructions has been relatively low, and that prices have often remained low during intervals when the net volume of declined pre-dispatched incremental energy has been high. Thus, while declined dispatch instructions may have a significant detrimental impact on grid operations and market prices, DMM believes that declined pre-dispatches have not been a major cause of price spikes in recent months.

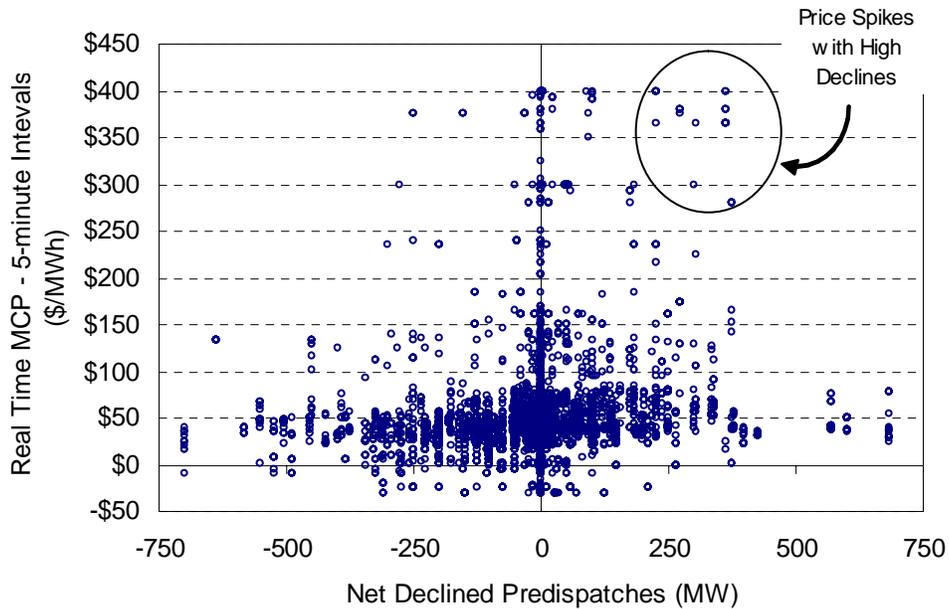
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<sup>8</sup> The net pre-dispatch amount each hour is calculated by adding the gross amount of incremental and decremental pre-dispatches declined during the hour. In practice, the RTMA software may issue off-setting incremental and decremental pre-dispatch instructions to resolve inter-zonal congestion, congestion on an individual inter-tie, or unscheduled flow issues. However, these situations cannot be readily identified based on RTMA dispatch data.

**Figure 2 – Distribution of Hourly Amounts of Declined Inter-tie Supplemental Energy Dispatches (March 1 – April 19, 2007)**



**Figure 3 - Declined Inter-tie Supplemental Energy Dispatches Amounts Correlation with Prices**



## Potential Next Steps

Over the longer term, if declined pre-dispatches of supplemental energy bids remains a significant issue, DMM will evaluate other measures that the CAISO can take to resolve the issue. These potential market design changes could range from implementing the uninstructed deviation penalty to developing a penalty or charge focused on declined inter-tie Supplemental Energy dispatches. However, DMM notes that none of these approaches appears to be feasible until after implementation of the CAISO's new MRTU market design in 2008.

Thus, over the short term, DMM believes the problems associated with declined dispatch instructions may be most effectively addressed by clarifying how market rules may apply to such bidding practices. Specifically, DMM believes that excessive declines may be addressed through CAISO Tariff 37.3, which requires participants to bid Supplemental Energy based on resources that are "reasonably expected to be available."

DMM has forwarded this issue to FERC's Office of Enforcement (OE), which retains the authority to interpret and enforce this provision of the CAISO Tariff. DMM hopes to work with OE to identify more specific guidelines as to how this or other market rules may apply to the submission and decline of inter-tie supplemental energy bids.